

Abstract



The invention relates to a loading system for transfer of hydrocarbons between an installation on the sea bed (16) and a floating vessel (10) in areas exposed to drifting ice. The system comprises a submerged turret buoy (19), a flexible riser (18) extending from the sea bed installation (24) to the buoy (19) intended to be securely connected to a corresponding pipe on board the vessel (10), and a plurality of mooring lines (17) connected to the buoy (19) and extending outwards therefrom. The system further comprises: protective means (20) for protecting the riser (18) from impacts when the riser (18) is in an extended, load transferring mode, and a protective structure (24) located in or on the sea bed (16) for protection of the riser (18) when in a retracted position in a non-operative mode; that the protective structure (24) containing means (28) for storing the riser (18) in a protected position when disconnected and retracted from the vessel (10). The invention also relates to a method for mooring a vessel to a submerged turret buoy and a method for installing a riser protection means.